08CU5767-1

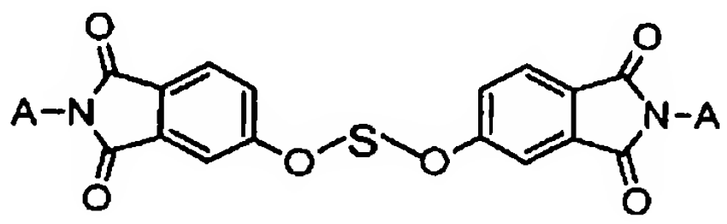
CLAIMS

1. (Currently amended) A method for the synthesis of an activated bisimide, comprising

reacting 4-halotetrahydrophthalic anhydride with a primary amine having the formula A-NH_2 to yield an N-substituted-4-halotetrahydrophthalimide wherein A is a group which activates the tetrahydrophthalimide ring system to aromatization;

aromatizing activated 4-halotetrahydrophthalimide in the presence of a catalyst to yield an activated 4-halophthalimide; and

treating activated 4-halophthalimide (V) with a disodium salt of a dihydroxy compound having the structure HO-S-OH, to yield the activated bisimide (VI):

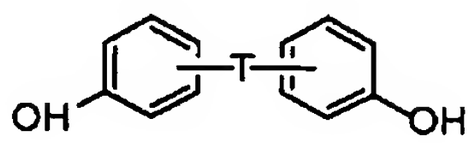


(VI)

wherein S comprises a straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a substituted straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a cycloalkylene group having from about 3 to about 20 carbon atoms, a substituted cycloalkylene group having from about 3 to about 20 carbon atoms, an arylene group having from 6 to about 20 carbon atoms or a substituted arylene group having from 6 to about 20 carbon atoms.

2. (Original) The method of claim 1, wherein S is selected from the group consisting of a straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a cycloalkylene group having from about 3 to about 20 carbon atoms, an arylene group having from 6 to about 20 carbon atoms, halogenated derivatives of arylene groups having from about 6 to 20 carbons.

3. (Original) The method of claim 1, wherein the dihydroxy compound is a bis(phenol) having the formula (XIII):



(XIII)

wherein T is selected from the group consisting of a single bond linking the two aryl groups, a straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a cycloalkylene group having from about 3 to about 20 carbon atoms; an arylene group having from 6 to about 20 carbon atoms, sulfide, carbonyl, sulfoxide, ether and mixtures thereof.

4. (Original) The method of claim 3, wherein T is selected from the group consisting of 2,2-bis[4-hydroxyphenyl]propane; 4,4'-bis(4-hydroxyphenyl)diphenyl ether; 4,4'-bis(4-phenoxy)diphenyl sulfide; 4,4'-bis(4-hydroxyphenyl)benzophenone; 4,4'-bis(4-hydroxyphenyl)diphenyl sulfone; 2,2-bis[4-(3-hydroxyphenyl)phenyl]propane; 4,4'-bis(3-hydroxyphenyl)diphenyl ether; 4,4'-bis(3-hydroxyphenyl)diphenyl sulfide; 4,4'-bis(3-hydroxyphenyl)benzophenone; 4,4'-bis(3-hydroxyphenyl)diphenyl sulfone; 4-(3-hydroxyphenyl)-4'-(4-hydroxyphenyl)diphenyl-2,2-propane; 4-(3-hydroxyphenyl)-4'-(4-hydroxyphenyl)diphenyl ether; 4-(3-hydroxyphenyl)-4'-(4-hydroxyphenyl)diphenyl sulfide; 4-(3-hydroxyphenyl)-4'-(4-hydroxyphenyl)benzophenone, and 4-(hydroxyphenyl)-4'-(4-hydroxyphenyl)diphenyl sulfone dianhydride, and mixtures thereof.

5. (Original) The method of claim 3, wherein the dihydroxy compound is bisphenol A.

6. (Original) The method of claim 1, wherein A is selected from the group consisting of pyridine, chloropyridine, nitropyridine, pyrimidine, pyrazine, thiazole, methylthiazole, benzothiazole, 1,3,4-thiadiazole, and benzotriflouride.

7. (Original) The method of Claim 1, wherein A is 2-pyridyl.

8. (Original) The method of claim 1, wherein the catalyst is copper based.

08CU5767-1

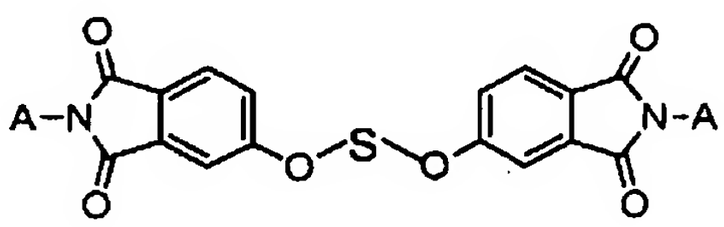
9. (Original) The method of claim 8, wherein the catalyst further comprises activated carbon.

10. (Currently amended) A method for the synthesis of poly(etherimide)s, comprising

reacting 4-halotetrahydrophthalic anhydride with a primary amine having the formula A-NH_2 to yield an N-substituted-4-halotetrahydrophthalimide wherein A is a group which activates the tetrahydrophthalimide ring system to aromatization;

aromatizing N-substituted-4-halotetrahydrophthalimide in the presence of a catalyst to yield an N-substituted-4-halophthalimide; and

treating N-substituted-4-halophthalimide with a disodium salt of a dihydroxy compound having the structure HO-S-OH, to yield the activated bisimide (VI); ~~and~~



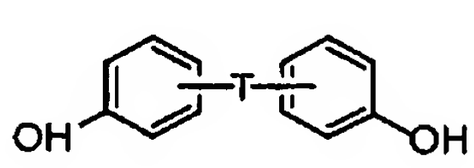
(XII)

wherein S comprises a straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a substituted straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a cycloalkylene group having from about 3 to about 20 carbon atoms, a substituted cycloalkylene group having from about 3 to about 20 carbon atoms, an arylene group having from 6 to about 20 carbon atoms or a substituted arylene group having from 6 to about 20 carbon atoms; and

reacting activated bisimide (XII) with a diamine to form a poly(etherimide) and the primary amine.

11. (Original) The method of claim 10, wherein S is selected from the group consisting of a straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a cycloalkylene group having from about 3 to about 20 carbon atoms, an arylene group having from 6 to about 20 carbon atoms, halogenated derivatives of arylene groups having from about 6 to 20 carbons.

12. (Original) The method of claim 11, wherein the dihydroxy compound is a bis(phenol) having the formula (XIII):



(XIII)

wherein T is selected from the group consisting of a single bond linking the two aryl groups, a straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a cycloalkylene group having from about 3 to about 20 carbon atoms; an arylene group having from 6 to about 20 carbon atoms, sulfide, carbonyl, sulfoxide, ether and mixtures thereof.

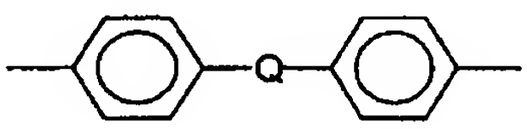
13. (Original) The method of claim 12, wherein the T is selected from the group consisting of 2,2-bis[4-hydroxyphenyl]propane; 4,4'-bis(4-hydroxyphenyl)diphenyl ether; 4,4'-bis(4-phenoxy)diphenyl sulfide; 4,4'-bis(4-hydroxyphenyl)benzophenone; 4,4'-bis(4-hydroxyphenyl)diphenyl sulfone; 2,2-bis[4-(3-hydroxyphenyl)phenyl]propane; 4,4'-bis(3-hydroxyphenyl)diphenyl ether; 4,4'-bis(3-hydroxyphenyl)diphenyl sulfide; 4,4'-bis(3-hydroxyphenyl)benzophenone; 4,4'-bis(3-hydroxyphenyl)diphenyl sulfone; 4-(3-hydroxyphenyl)-4'-(4-hydroxyphenyl)diphenyl-2,2-propane; 4-(3-hydroxyphenyl)-4'-(4-hydroxyphenyl)diphenyl ether; 4-(3-hydroxyphenyl)-4'-(4-hydroxyphenyl)diphenyl sulfide; 4-(3-hydroxyphenyl)-4'-(4-hydroxyphenyl)benzophenone, and 4-(hydroxyphenyl)-4'-(4-hydroxyphenyl)diphenyl sulfone dianhydride, and mixtures thereof.

14. (Original) The method of claim 10, wherein A is selected from the group consisting of pyridine, chloropyridine, nitropyridine, pyrimidine, pyrazine, thiazole, methylthiazole, benzothiazole, 1,3,4-thiadiazole, and benzotriflouride.

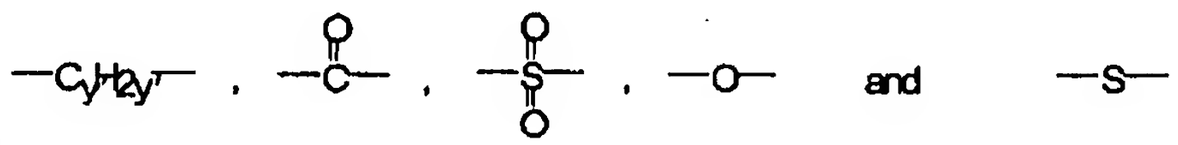
15. (Original) The method of Claim 10, wherein A is 2-pyridyl.

08CU5767-1

16. (Original) The method of claim 10, wherein the diamine has the structure H_2N-Z-NH_2, wherein Z is selected from the group consisting of a straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a cycloalkylene group having from about 3 to about 20 carbon atoms, an arylene group having from 6 to about 20 carbon atoms, halogenated derivatives of an arylene group having from 6 to about 20 carbon atoms, and diarylene radicals of the following general formula (XV):

(XV) 

wherein Q includes, but is not limited to, the formula (XVI):

(XVI) 

wherein y is an integer from about 1 to about 5, methylene, ethylene, propylene, isopropylene, n-butylene, 1,3-phenylene, naphthylene, and mixtures thereof.

17. (Original) The method of claim 10, wherein the catalyst is copper based.

18. (Original) The method of claim 17, wherein the catalyst further comprises activated carbon.

19. (Original) The method of claim 10 further comprising recycling the primary amine.

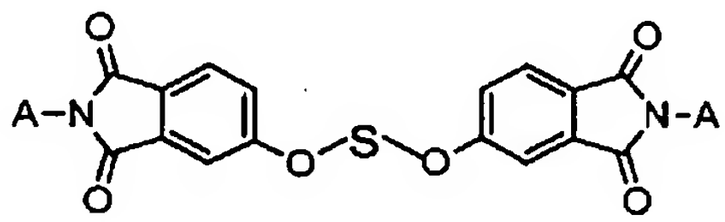
08CU5767-1

20. (Currently amended) A method for the synthesis of poly(etherimide)s, comprising

reacting 4-halotetrahydrophthalic anhydride with a primary amine having the formula A-NH_2 to yield an N-substituted-4-halotetrahydrophthalimide wherein A is a group which activates the tetrahydrophthalimide ring system to aromatization;

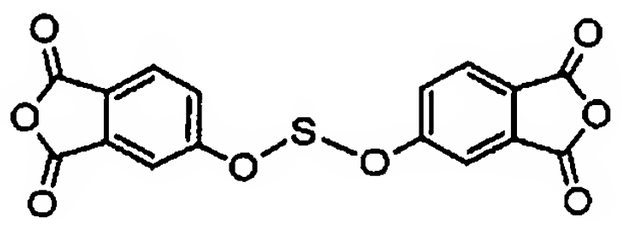
aromatizing the N-substituted-4-halotetrahydrophthalimide in the presence of a catalyst to yield an N-substituted-4-halophthalimide; and

treating N-substituted-4-halophthalimide with a disodium salt of a dihydroxy compound having the structure HO-S-OH, to yield the activated bisimide (VI); and



(VI)

converting the activated bisimide (VI) to dianhydride (VIII)



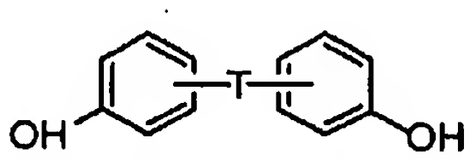
(VIII)

wherein S comprises a straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a substituted straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a cycloalkylene group having from about 3 to about 20 carbon atoms, a substituted cycloalkylene group having from about 3 to about 20 carbon atoms, an arylene group having from 6 to about 20 carbon atoms or a substituted arylene group having from 6 to about 20 carbon atoms.

and reacting dianhydride (VIII) with a diamine to yield a poly(etherimide).

21. (Original) The method of claim 20, wherein S is selected from the group consisting of a straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a cycloalkylene group having from about 3 to about 20 carbon atoms, an arylene group having from 6 to about 20 carbon atoms, halogenated derivatives of arylene groups having from about 6 to 20 carbons.

22. (Original) The method of claim 20, wherein the dihydroxy compound is a bis(phenol) having the formula (XIII):



(XIII)

wherein T is selected from the group consisting of a single bond linking the two aryl groups, a straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a cycloalkylene group having from about 3 to about 20 carbon atoms; an arylene group having from 6 to about 20 carbon atoms, sulfide, carbonyl, sulfoxide, ether and mixtures thereof.

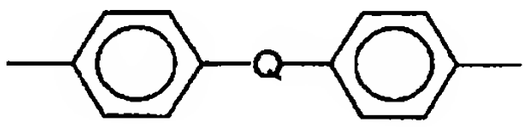
23. (Original) The method of claim 22, wherein T is selected from the group consisting of 2,2-bis[4-hydroxyphenyl]propane; 4,4'-bis(4-hydroxyphenyl)diphenyl ether; 4,4'-bis(4-phenoxy)diphenyl sulfide; 4,4'-bis(4-hydroxyphenyl)benzophenone; 4,4'-bis(4-hydroxyphenyl)diphenyl sulfone; 2,2-bis[4-(3-hydroxyphenyl)phenyl]propane; 4,4'-bis(3-hydroxyphenyl)diphenyl ether; 4,4'-bis(3-hydroxyphenyl)diphenyl sulfide; 4,4'-bis(3-hydroxyphenyl)benzophenone; 4,4'-bis(3-hydroxyphenyl)diphenyl sulfone; 4-(3-hydroxyphenyl)-4'-(4-hydroxyphenyl)diphenyl-2,2-propane; 4-(3-hydroxyphenyl)-4'-(4-hydroxyphenyl)diphenyl ether; 4-(3-hydroxyphenyl)-4'-(4-hydroxyphenyl)diphenyl sulfide; 4-(3-hydroxyphenyl)-4'-(4-hydroxyphenyl)benzophenone, and 4-(hydroxyphenyl)-4'-(4-hydroxyphenyl)diphenyl sulfone dianhydride, and mixtures thereof.

24. (Original) The method of claim 20, wherein A is selected from the group consisting of pyridine, chloropyridine, nitropyridine, pyrimidine, pyrazine, thiazole, methylthiazole, benzothiazole, 1,3,4-thiadiazole, and benzotriflouride.

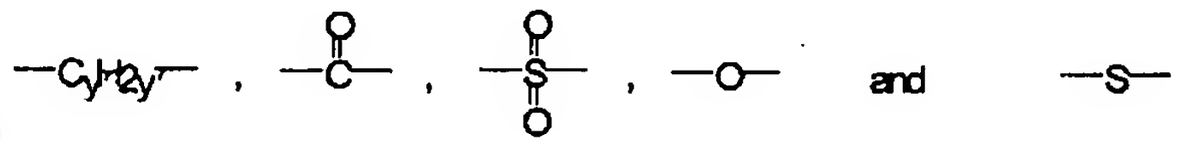
25. (Original) The method of Claim 20, wherein A is 2-pyridyl.

08CU5767-1

26. (Original) The method of claim 20, wherein the diamine has the structure H_2N-Z-NH_2, wherein Z is selected from the group consisting of a straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a cycloalkylene group having from about 3 to about 20 carbon atoms, an arylene group having from 6 to about 20 carbon atoms, halogenated derivatives of an arylene group having from 6 to about 20 carbon atoms, and diarylene radicals of the following general formula (XV):

(XV) 

wherein Q includes, but is not limited to, the formula (XVI):

(XVI) 

wherein y is an integer from about 1 to about 5, methylene, ethylene, propylene, isopropylene, n-butylene, 1,3-phenylene, naphthylene, and mixtures thereof.

27. (Original) The method of Claim 20, wherein the activated bisimide (VI) is converted to dianhydride (VIII) by reacting the activated bisimide with phthalic anhydride.

28. (Original) The method of Claim 20, wherein the activated bisimide (VI) is converted to dianhydride (VIII) by hydrolysis ring closure.

29. (Original) The method of claim 20, wherein the catalyst is copper based.

30. (Original) The method of claim 29, wherein the catalyst further comprises activated carbon.

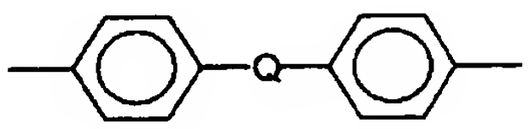
08CU5767-1

31. (Currently amended) A method for the synthesis of poly(etherimide)s, comprising

reacting 4-halotetrahydrophthalic anhydride with a primary amine having the formula A-NH_2 to yield an N-substituted-4-halotetrahydrophthalimide wherein A is a group which activates the tetrahydrophthalimide ring system to aromatization;

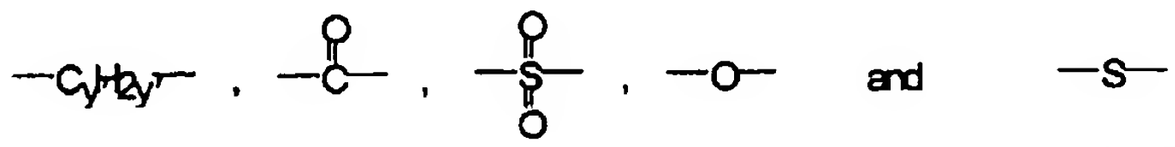
aromatizing N-substituted-4-halotetrahydrophthalimide in the presence of a catalyst to yield an N-substituted-4-halophthalimide in the presence of a catalyst;

treating N-substituted-4-halophthalimide (V) with a diamine having the structure ~~(VII)~~ H_2N-Z-NH_2, wherein Z is selected from the group consisting of a straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a cycloalkylene group having from about 3 to about 20 carbon atoms, an arylene group having from 6 to about 20 carbon atoms, halogenated derivatives of an arylene group having from 6 to about 20 carbon atoms, and diarylene radicals of the following general formula (XV):



(XV)

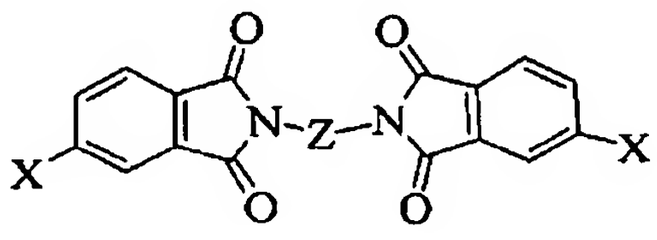
wherein Q includes, but is not limited to, the formula (XVI):



(XVI)

wherein y is an integer from about 1 to about 5, methylene, ethylene, propylene, isopropylene, n-butylene, 1,3-phenylene, naphthylene, and mixtures thereof

to produce the dihalobisimide (IX); and



(IX)

reacting dihalobisimide (IX) with the disodium salt of a dihydroxy compound having the structure HO-S-OH wherein S comprises a straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a substituted straight or branched chain alkylene group having from about 2 to about 20 carbon atoms, a cycloalkylene group having from about 3 to about 20 carbon atoms, a substituted cycloalkylene group having from about 3 to about 20 carbon atoms, an arylene group having from 6 to about 20 carbon atoms or a substituted arylene group having from 6 to about 20 carbon atoms, to yield poly(etherimide).

32. (Original) The method of claim 31, wherein the catalyst is copper based.

33. (Original) The method of claim 32, wherein the catalyst further comprises activated carbon.

34. (Previously presented) The method of claim 31, wherein A is selected from the group consisting of pyridine, chloropyridine, nitropyridine, pyrimidine, pyrazine, thiazole, methylthiazole, benzothiazole, 1,3,4-thiadiazole, and benzotrifluoride.

35. (Original) The method of claim 34, wherein A is 2-pyridyl.

36. (Previously presented) The method of claim 31, wherein the dihydroxy compound is bisphenol A.

37. (Original) A method for the synthesis of an activated 4-halophthalimide, comprising

reacting 4-halotetrahydrophthalic anhydride with a primary amine having the formula A-NH_2 to yield an N-substituted-4-halotetrahydrophthalimide wherein A is a group which activates the tetrahydrophthalimide ring system to aromatization; and

aromatizing activated 4-halotetrahydrophthalimide in the presence of a catalyst to yield an activated 4-halophthalimide.

38. (Original) The method of claim 37, wherein the catalyst is copper based.

39. (Original) The method of claim 38, wherein the catalyst further comprises activated carbon.

40. (Original) The method of claim 37, wherein A is selected from the group consisting of pyridine, chloropyridine, nitropyridine, pyrimidine, pyrazine, thiazole, methylthiazole, benzothiazole, 1,3,4-thiadiazole, and benzotriflouride.

41. (Original) The method of claim 40, wherein A is 2-pyridyl.